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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

VALENCIA, DANIEL E

ART UNIT PAPER NUMBER

2874

DATE MAILED: 01/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/035,356

Applicant(s)

TARTAGLIA ET AL.

Examiner

Daniel E Valencia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 28 and 29 is/are allowed.
- 6) ☐ Claim(s) 1-9, 13-18, 20, 21 and ²³⁻²⁷28 is/are rejected.
- 7) ☐ Claim(s) 10-12, 19 and 22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 09 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Inventorship

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-4, 9, 13, 16, 17, 18, 20, 21, 23, 24, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Kuczynski U.S. Patent No. 6,356,686. Refer to the appropriate drawings or parts of the specification. Kuczynski discloses an optoelectronic device encapsulant with all the limitations of the abovementioned claims (fig. 3 and 4). Regarding claims 1, 9, 17, and 18,

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Kuczynski discloses a method of encapsulating an optoelectronic device, comprising the steps of: providing a device die (230) on a substrate (210), said device die including an optoelectronic device thereon (235); forming a volume of fluid encapsulant material (400) over said optoelectronic; shaping said volume of fluid encapsulant material into a shaped encapsulant covering said optoelectronic device by referencing at least one of said device die and said optoelectronic device (fig 4); and curing said shaped encapsulant thereby forming a cured encapsulant (col. 4). Kuczynski further discloses the step of positioning an end face of an optical transmission medium in confronting relation with said cured encapsulant, thereby butt-coupling said optoelectronic device to said optical transmission medium (col. 4), as described in instant claims 2 and 13. With reference to claims 3 and 4, Kuczynski discloses that the step of shaping includes shaping said volume fluid encapsulant material into a substantially solid encapsulant and step of curing comprises hardening said substantially solid encapsulant (col. 6 and 7). Kuczynski also discloses that the step of forming one of an epoxy, a curing gel and a transparent polymer over said optoelectronic device, as mentioned in instant claims 16 and 25. Regarding claim 20, the Kuczynski reference discloses that the encapsulant encases said optoelectronic device and further including a wire bond formed on said upper planar surface and coupling said optoelectronic device to a further component, said encapsulant further encasing said wire bond, and said encapsulant having a first thickness over said optoelectronic device and a second thickness being greater than said first thickness in a region proximate to said wire bond (col.6, lines 60-bottom). Kuczynski further discloses that the optoelectronic device is a VCSEL (col. 7, lines 58), as mentioned in claim 21. Referring to claim 23 and 24, Kuczynski's reference shows that the encapsulant includes a recessed portion over the optoelectronic device and a peripheral

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portion (220), said end surface and said peripheral portion forming a substantially conterminous interface, wherein the recessed portion (230) is essentially parallel to said top surface (fig 4).

Although the reference does not explicitly state that the thickness of the region proximate the wire bond is greater, this would be an inherent property of applying encapsulant to an optoelectronic device with surrounding wire bonds that do not extend as far from the surface of the substrate as the actual device. When applying a flat encapsulant for butt-coupling a transmission medium, it is inherently disclosed by the reference that the thickness of encapsulant over the wire bond is greater.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-8, 14, 15, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuczynski U.S. Patent No. 6,356,686. Refer to the appropriate drawings or parts of the specification. Kuczynski discloses an optoelectronic encapsulant with a majority of the claimed limitations of the present invention including a molding tool and mechanical guides to ease alignment; however, the reference provides that the mechanical guides are provided on the molding tool rather than the substrate (fig 3). In addition, the cavities are provided on the substrate, wherein the mechanical guides from the molding tool are disposed within the cavities and the optical transmission medium is retained within a ferrule connector, said ferrule connector

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for contact with cured encapsulant (col. 3, line 58 - col. 4, line 19). Although the Kuczynski reference teaches that the mechanical guides are disposed on the molding tool (instead of the substrate) and the mating cavities are disposed on the substrate (rather than the molding tool) as explained in instant claims 5-8, 14, and 15, one of ordinary skill in the art would recognize that the placing the guides on the substrate is equivalent to placement on the tool. Further, the underlying reason for attaching mechanical guides and mating alignment cavities is the same, whether they are placed on the substrate or the molding tool. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the mechanical guide placement on the molding tool rather than the substrate.

In addition, regarding claim 27, Kuczynski discloses that the encapsulated device can be an LED or light emitting diode (col. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use monitor photodiode instead. Regarding claim 26, the thickness of the encapsulant is non-critical to the invention and is not patentable.

Allowable Subject Matter

Claims 10-12, 19, and 22, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: As to dependent claims 10, 19, and 22, the prior art alone or in combination fails to disclose or render obvious the optical subassembly or method of forming, wherein the top surface of the encapsulant is oblique or angled with respect to said upper planar surface and said end surface is

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oblique or angled to an axis of said optical transmission medium, said top surface and said end surface forming a substantially conterminous surface. For example, Kuczynski discloses an encapsulant, for butt-coupling a transmission medium; however, the reference discloses a surface that is flat and perpendicular to the axis of transmission and parallel to the surface of the device.

Claims 28 and 29 are allowed.

ADL The following is an examiner's statement of reasons for ^{*allowability*}~~allowance~~. As to independent claim 28, the prior art alone or in combination fails to disclose, render obvious or even suggest a device according to claim 28, wherein the surface where the encapsulating material meets the transmission medium is obliquely angled with respect to the planar surface. For example, Kuczynski discloses an encapsulant, for butt-coupling a transmission medium; however, the reference discloses a surface that is flat and perpendicular to the axis of transmission and parallel to the surface of the device.

ADL ~~Any comments considered necessary by applicant must be submitted no later than the~~
ADL ~~payment of the issue fee and, to avoid processing delays, should preferably accompany the issue~~
ADL ~~fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for~~
ADL ~~Allowance."~~

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Peterson U.S. Patent No. 6,379,988 discloses a pre-release plastic packaging of MEMS and IMEMS devices that teaches molding of encapsulant.

Schmidt U.S. Patent No. 4,843,036 discloses a method for encapsulating electronic devices that teaches the advantage of shaping encapsulant.

Kragl U.S. Patent No. 5,574,806 discloses a hybrid integrated optical circuit and device for emitting light, wherein the encapsulant is shaped using a molding tool.

Huang U.S. Patent No. 5,993,075 discloses a vertical cavity surface emitting laser package, wherein an optical fiber is confronted with the encapsulant surface.

Bowen U.S. Patent No. 4,186,996 discloses an optic adapter junction for encapsulating an optoelectronic device and coupling a fiber thereto.

Honmu U.S. Patent No. 6,019,523 discloses an optical semiconductor module and method for manufacturing the same, wherein the optoelectronic device is encapsulated and coupled to a fiber.

Masui U.S. Patent No. 5,557,116 discloses a semiconductor laser device and resin layer.

Mukerji U.S. Patent No. 5,614,131 discloses a method of making an optoelectronic device, wherein the device is encapsulated by an adhesive that is shaped and cured.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel E Valencia whose telephone number is (703)-305-4399. The examiner can normally be reached on Monday-Friday 9:30-6:00

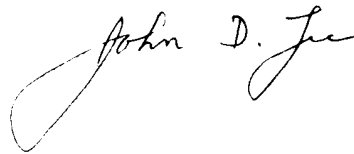
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The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-7724 for regular communications and (703)-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

A handwritten signature in dark ink, appearing to be "D. Allen", written in a cursive style.

dv
January 10, 2003

A handwritten signature in dark ink, appearing to be "John D. Lee", written in a cursive style.